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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,770	04/09/2004	Ichiro Koiwa	OKI.651	8824
20987	7590	07/26/2005	EXAMINER	
VOLENTINE FRANCOS, & WHITT PLLC ONE FREEDOM SQUARE 11951 FREEDOM DRIVE SUITE 1260 RESTON, VA 20190			HOANG, QUOC DINH	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/820,770

Applicant(s)

KOIWA, ICHIRO

Examiner

Quoc D. Hoang

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 06/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-3, 7 and 8) in the reply filed on 06/17/2005 is acknowledged.
2. This office action acknowledges receipt of the following items from the Applicant:
 - The Claims filed on 04/09/2004.
 - The Specification filed on 04/09/2004.
 - The Drawing filed on 04/09/2004.
 - The Abstract filed on 04/09/2004.
 - The Oath/declaration filed on 04/09/2004.

Oath/Declaration

3. The Oath/declaration filed on 04/09/2004 is acceptable.

Priority

4. Acknowledgment is made of applicant's claim for foreign priority base on an application No. 106601/2003 filed in Japan on 04/10/2003.

It is noted that Applicants have filled a certified copy of said application as required by U.S.C 119, which papers have been placed of record in the file.

Information Disclosure Statement

5. The information disclosure statement (IDS) filed on 06/17/2004. The references cited on the PTOL 1449 Form have been considered.

Specification

6. The specification has been checked to the extent necessary to determine the present of all possible minor errors. However, Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Aoki et al., (US Pat No. 6,033,953) (hereinafter "Aoki").

Regarding claim 1, Aoki teaches a ferroelectric capacitor comprising:

a bottom electrode 38 (col. 1, lines 14-57 and Fig. 14);

a plurality of projection electrodes 38a formed on the bottom electrode 38 (col. 1, lines 14-57 and Fig. 14). It is noted that the convex parts 38a are considered the projection electrodes;

a ferroelectric layer 40 formed on the bottom electrode 38 and the projection electrodes 38a (col. 1, lines 14-57 and Fig. 14); and

a top electrode 37 formed on the ferroelectric layer 40 (col. 1, lines 14-57 and Fig. 14).

Regarding claim 8, Aoki teaches wherein the bottom electrode 38 and the projection electrodes 38a are made of a same material (platinum) (col. 1, lines 50-55 and Fig. 14).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2, 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al., (US Pat No. 6,033,953) (hereinafter "Aoki") in view of Lu., (US Pat No. 5,679,596).

Regarding claim 2, Aoki teaches a plurality of projection electrodes, but fails to teach wherein spacing between central portions of each projection electrode has a range from 10 % to 20% of a size of the ferroelectric capacitor.

However, Lu teaches wherein spacing between central portions of each projection electrode 14b has a range from 1.5 % to 75% of a size of the ferroelectric capacitor (col. 4, line 50 through col. 5, line 65 and Fig. 5). *It is noted that the size of the ferroelectric capacitor is considered the width (2,000-10,000 Å) of the bottom electrode 11 (col. 4, lines 40-43), the width of the projection electrode 14b is between about 50-500 Å (col. 5, lines 17-18), and the spaces 14a between the projection electrode 14b are between about 100-1000 Å (col. 5, lines 19-21). Hence, after calculating, the spacing between central portions of each projection electrode 14b has a range from 1.5 % to 75% of a size of the ferroelectric capacitor.* Since Aoki and Lu are all from the same field of endeavor, the purpose disclosed by Lu would have been recognized in the pertinent art of Aoki. It would have been obvious to a person of ordinary skill in the art at the

time of the invention was made to provide spacing between central portions of each projection electrode in order to increase the surface area of the bottom electrode, therefore to obtain the desired increased capacitance as taught by Lu, column 5, lines 24 through col. 6, line 3.

Although Lu's percentage range (1.5 % to 75%) is not the claimed range (10 % to 20%), this does not define patentable over Aoki in view of Lu since it has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claim 3, Aoki teaches a plurality of projection electrodes, but fails to teach wherein wherein a size of each projection electrode has a range from 5 % to 10% of a size of the ferroelectric capacitor.

However, Lu teaches wherein a size of each projection electrode has a range from 0.5 % to 25% of a size of the ferroelectric capacitor (col. 4, line 50 through col. 5, line 65 and Fig. 5). *It is noted that the size of the ferroelectric capacitor is considered the width (2,000-10,000 Å) of the bottom electrode 11 (col. 4, lines 40-43), the size of each projection electrode is considered the width of the projection electrode 14b, which is between about 50-500 Å (col. 5, lines 17-18). Hence, after calculating, a size of each projection electrode has a range from 0.5 % to 25% of a size of the ferroelectric capacitor.* Since Aoki and Lu are all from the same field of endeavor, the purpose disclosed by Lu would have been recognized in the pertinent art of Aoki. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to provide a size of each projection electrode has a range from 5 % to 10% of a size of the ferroelectric capacitor in order to increase the surface area of the bottom electrode, therefore to

Art Unit: 2818

obtain the desired increased capacitance as taught by Lu, column 5, lines 24 through col. 6, line 3. Although Lu's percentage range (0.5 % to 25%) is not the claimed range (5 % to 10%), this does not define patentable over Aoki in view of Lu since it has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claim 7, Aoki teaches a plurality of projection electrodes, but fails to teach wherein the projection electrodes are arranged evenly spaced on the bottom electrode.

However, Lu teaches wherein the projection electrodes 14b are arranged evenly spaced on the bottom electrode 11 (col. 4, line 50 through col. 5, line 65 and Fig. 5). *It is noted that the evenly spaced between the projection electrodes 14b is the width of the crevice or space 14a (col. 5, lines 19-21).* Since Aoki and Lu are all from the same field of endeavor, the purpose disclosed by Lu would have been recognized in the pertinent art of Aoki. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to provide evenly spaced between the projection electrodes in order to increase the surface area of the bottom electrode, therefore to obtain the desired increased capacitance as taught by Lu, column 5, lines 24 through col. 6, line 3.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quoc Hoang whose telephone number is (571) 272-1780. The examiner can normally be reached on Monday-Friday from 8.00 AM to 5.00 PM.

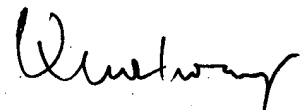
Art Unit: 2818

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone numbers of the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Quoc Hoang

Patent examiner/AU 2818



07/22/2005